# STATISTICS COLLOQUIUM

MONDAY, NOVEMBER 08, 2010
TALK: 4:00 PM — SCIENCE CENTER RM. 309
RECEPTION: 5:15 PM — SCIENCE CENTER, 7TH FLOOR

## "Estimation in Dirichlet Process Random Effects Models"

**George Casella**
**Department of Statistics**
**University of Florida**

ABSTRACT

We develop a new Gibbs sampler for a linear mixed model with a Dirichlet process random effect term, which is easily extended to a generalized linear mixed model with a probit link function. Our Gibbs sampler exploits the properties of the multinomial and Dirichlet distributions, and is shown to be an improvement, in terms of operator norm and efficiency, over other commonly used MCMC algorithms. We also investigate methods for the estimation of the precision parameter of the Dirichlet process, finding that maximum likelihood may not be desirable, but a posterior mode is a reasonable approach.

This work was originally motivated by problems in the social sciences, and we illustrate out methods with two datasets. In particular, the use of the Dirichlet process to model random effects results in uniformly shorter credible intervals on the coefficients of interest in linear and probit models.

This is joint work with Minjung Kyung and Jeff Gill (Washington University in St. Louis).